REMARKS

The following remarks are prepared in response to the Office Action of February 23, 2007. Claims 1-5, 8-18, 24-30, and 37-42 remain pending in this application. Claims 37-42 are newly added but do not add any new matter. Reconsideration in light of the amendments and remarks made herein is respectfully requested.

The Office Action rejected claims 1-11, 13-15, 17-18, 24, and 28-30 under 35 U.S.C. § 102(b) as being anticipated by *Young, et al.* (U.S. 6,018,456, hereinafter "*Young*").

The present invention seeks to provide a fully distributed, scaleable and modular rack architecture and management system. It accomplishes this by utilizing a rack with a vertical column 102. The vertical column 102 can have a plurality of backplane modules 106 connected to a midplane module 118. The backplane module 106 can have a plurality of server interface modules ("SIM") 108 connected to it. Each of the server interface modules 108 can in turn have a plurality of rack devices 114 connected to it. The midplane module 118 can be connected to the control module 128. (*See* Figure 1).

As seen in Figures 7 and 8, the SIM 700 reduces the number of cables that would otherwise run along the back of a rack cabinet 202 by concentrating a plurality of cables into a single, multiple use cable. Thus, it can transfer a plurality of signals such as Board ID, TTL signals, USB, and RGB video and synchronization to the backplane module. (¶¶ 0055-56; Figures 7-8). The SIM may be hot-swappable to permit expanding the number of modules in a vertical column without the need to shut off all the devices in a rack cabinet. The hot swappable feature is made possible by detect-and-enable protection circuitry throughout the modules of the track system monitoring software that identifies when new devices have been connected or come online and enabling them through the protection circuitry. (¶ 0061).

Figure 10 depicts a backplane module 1000 which can include a micro-controller 1004 that controls a plurality of switches 1006, 1008, and 1010 to select one of a plurality of SIM that may be coupled to the backplane module 1000 via connectors 1002. Sync selector 1006 selects one of a plurality of synchronization signals from the SIM coupled to connectors 1002, the video switch 1008 selects one of the video signals coming from the SIM and the USB switch 1010 selects one of the USB signals from the SIM. Signals from a management bus interface 1012 are transferred to and from the micro-controller 10043 and directly to a second management bus interface 1014 to the SIM. The module reset unit 1018 permits the backplane module 1000 to reset a SIM when instructed to do so. (¶ 0068; Figure 10).

The midplane module 1100 is shown in Figure 11. The midplane module 1100 is a switch that concentrates the signals from the different backplane modules 106 into a single bus to the control module 120 (Figure 1). A micro-controller 1104 controls signals to and from the midplane module 1100. It also receives control signals over the management bus 1112 and configures the selector 1106 and switches 1108 and 1110 accordingly to enable signal transmissions to and from a particular backplane connector 1120. A module-reset unit 1118 allows the midplane module 1100 to reset a backplane module (Figure 10, 1000) when instructed to do so. The midplane module 1100 helps to reduce the amount of cables between the vertical column 102 and the control module 120 by allowing only a single cable to be used between the control module cable connector 1122 and the control module connector 130. (¶ 0069-70; Figure 11).

Figure 12 depicts the control module 1200. The control module 1200 provides the main switching control unit and user interface system. It includes a plurality of user card slots or connectors 120 which permit multiple users to simulataneously access servers. The control

module's control processors 1218 manage the midplane via interface 1206 and the user modules via serial controller 1208. (¶¶ 0071-0072; Figure 12). The control module also has multiple processors that manage and control all the modules such as SIM, midplane module, backplane module, and user modules. It also provides the network interface for remote management. (¶ 0041).

Young seeks to provide an enclosure system for receiving a number of plug-in computer peripheral devices, utilizing front and rear cages or enclosures that are separated by a vertical backplane having internal circuit interconnections and multi-pin docking connectors on each face. (Abstract).

With respect to claim 1, *Young* does not teach or suggest "a midplane module coupled to the electrically conductive bus" or "the midplane module communicatively coupled to the one or more backplane modules." *Young* does not disclose a midplane module but rather discloses a backplane module 20 which is a multi-layered printed circuit board for the disk array, the additional peripheral device, power supplies and other associated circuits and devices.

In contrast, in the present invention, there is both a backplane module and a midplane module. As can be seen in Figure 1, the midplane module helps to reduce the number of cables that connects between the vertical column 102 and the control module 120. Rather than having all of the backplane modules 106 connect individually to the control module 128, the backplane modules 106 connects to the midplane module 118. The midplane module 118 then helps ease the cabling requirements between the vertical column 102 and the control module 120 in Figure 1 by utilizing a singular cable between the control module cable connector 1122 and the control module connector 130. (¶ 0070; Figure 11).

Thus, claim 1 has novelty and inventiveness over *Young*.

With respect to claim 2, *Young* does not teach or suggest "an interface module coupled to an interface in the interface column, the interface module to uniquely identify an interface and provide communicative access to the one or more electrical devices coupled thereto." The Office Action cites to face block 90 as the interface module. However, face block 90 is only a "molded plastic in an attractive, modern design and color." It is basically a faceplate to guard the device attached to the tray 70. (Col. 8, lns. 38-46; Figure 7). There is no indication that it allows communicative access to electrical devices.

In contrast, in the present invention, the server interface module 700 has an interface 701 that plugs into a bus running along the backplane of the vertical column 208. The server interface module 700 allows a plurality of devices to be connected to it while transferring the data from the connected devices to the backplane module through a hybrid cable. (¶¶ 0054-58; Figures 1, 7 and 8).

Thus, claim 2 has novelty and inventiveness over *Young*.

With respect to claim 10, *Young* does not teach or suggest "wherein the control module is further configured to maintain an inventory of the devices that are coupled to the interface column." *Young* discloses that controller disk cage 12 receives a plug-in array controller such as controllers 126 and 127 in Figure 12. (Col. 7, lns. 43-57). However, *Young* does not teach or suggest that that the controllers maintain an inventory of the devices that are coupled to the interface column.

With respect to claim 11, *Young* does not teach or suggest "wherein the control module is further configured to provide an operator control access to one or more of the devices coupled to the interface column." Again, *Young* does not disclose the specific functionality of the

controller and there is no indication that it provides the operator control access to the one or more devices coupled to the interface column. (Col. 7, lns. 43-57).

With respect to claim 13, *Young* does not teach or suggest "wherein the control module permits devices coupled to the interface column to share a peripheral device." Likewise, *Young* does not disclose the specific functionality of the controller and there is no indication that it allows devices coupled to the interface column to share a peripheral device. (Col. 7, lns. 43-57).

With respect to claim 14, *Young* does not disclose "wherein the control module is communicatively coupled to other electrical devices in other rack frames and capable to manage those electrical devices." *Young* does not disclose the specific functionality of the controller and there is no indication that it is communicatively coupled to other electrical devices in other rack frames. *Young* also does not disclose that the controller is capable of managing electrical devices in other rack frames. (Col. 7, lns. 43-57).

With respect to claim 15, *Young* does not teach or suggest "wherein the control module is configured to gather physical location information and configuration information of the electrical devices." There is no indication that the controller in *Young* is configured to gather physical location information and configuration information of the electrical devices.

With respect to claim 17, *Young* does not teach or suggest "wherein the control module gathers and analyzes usage of the electrical devices for proper preventive maintenance and provisioning of the electrical devices." *Young* does not teach or suggest the specific functionality of the controller and there is no indication that it gathers or analyzes usage of electrical devices for proper preventative maintenance and provisioning of the electrical devices. (Col. 7, lns. 43-57).

With respect to claim 24, *Young* does not teach or suggest "a control module coupled to the electrically conductive bus in the interface column to provide management access to the one or more electrical devices coupled to the interface column." *Young* only discloses that controller disk cage 12 receives a plug-in array controller such as controllers 126 and 127 in Figure 12. (Col. 7, lns. 43-57). However, *Young* does not teach or suggest that the controllers provide management access to the one more electrical devices coupled to the interface column.

With respect to claim 28, *Young* does not teach or suggest "wherein the control module is further configured to permit a user to remotely control one or more of the electrical devices coupled to the interface column." There is no indication that the controller in *Young* is configured to pert a user to remotely control one or more of the electrical devices coupled to the interface column.

With respect to claim 29, *Young* does not teach or suggest "wherein the control module is further configured to remotely control one or more electrical devices coupled to an interface column of another rack frame." *Young* does not disclose the specific functionality of the controller and there is no indication that it is configured to remotely control one or more electrical devices, much less electrical devices coupled to an interface column of another rack frame. (Col. 7, lns. 43-57).

With respect to claim 30, *Young* does not teach or suggest "wherein the control module is further configured to automate management of the one or more electrical devices based on user programmable rules." There is no indication that the controller in *Young* is configured to automate management of the one or more electrical devices based on user programmable rules.

The Office Action also rejected claims 12 and 25-26 under 35 U.S.C. § 103(a) as being unpatentable over *Young* in view of *Bottom et al.* (U.S. Pat App. No. 2002/0194412, hereinafter "*Bottom*").

The Office Action admits that with respect to claim 12, *Young* does not teach or suggest "wherein the control module provides keyboard and video access to the one or more devices coupled to the interface column."

Bottom is directed towards a modular system that includes a midplane having system management bus and a plurality of blade interfaces on the midplane. (Abstract).

However, *Bottom* does not teach or suggest "wherein the control module provides keyboard and video access to the one or more devices coupled to the interface column." In *Bottom*, the keyboard/mouse connector 501 allows a user to connect a keyboard or mouse to the server blade 500 for interaction with the server blade. (¶ 0029, Figure 5). It is not connected to a control module. Furthermore, as can be seen in Figures 2 and 5, there are a plurality of server blades 110, each with its own mouse/keyboard connection. Thus, it appears that the keyboard/mouse must be plugged into an individual server blade in order to control that specific server blade.

In contrast, in the present invention, only a single keyboard/mouse need be connected to the control module. The control module then can access the electrical devices connected to the interface column. (¶¶ 0072-76).

With respect to claim 25, the arguments for patentability with respect to claims 10 and 12 are repeated and incorporated herein.

With respect to claim 26, the arguments for patentability with respect to claim 12 is repeated and incorporated herein.

With respect to claim 37, *Young* does not teach or suggest "wherein the interface module is hot-swappable to permit adding or removing electrical devices without the need to power off other components in the rack by using a detect-and-enable protection circuitry that identifies when new devices have been connected or come online and enabling them through the detect-and-enable protection circuitry." *Young* only discloses that the modules may be hot-swappable, but does not disclose how they are hot swappable. In contrast, in the present invention, the interface modules are hot-swappable by utilizing a detect-and-enable protection circuitry.

Conclusion

If there are any questions with regards to this response, or if the Examiner believes that a telephone interview will help further the prosecution of the case, he is respectfully requested to contact the undersigned attorney at the listed telephone number.

Very truly yours,

SNELL & WILMER L.L.P.

Ketan S. Vakil
Registration No. 43,215
600 Anton Boulevard, Suite 1400
Costa Mesa, CA 92626-7689
Phone: 714.427.7405
Fax: 714.427.7799